

## CLAIMS:

1. An apparatus for determining the condition of a region of tissue comprising:

a cup having an interior, and first and second openings;

an electrode disposed within the interior; and

a source of suction connectable to the first opening; and

wherein when the second opening is placed over a region of tissue and suction is applied to the first opening and an electrical connection is made between the region of tissue to be examined and the electrode.

2. The apparatus of claim 1, wherein said source of suction is a syringe.

3. The apparatus of claim 1, wherein said source of suction is an aspirator.

4. The apparatus of claim 1, further comprising an electroconductive medium for facilitating an electrical connection between the region of tissue to be examined and the electrode.

5. The apparatus of claim 4, wherein said electroconductive medium is a physiologic saline solution.

6. A device for use in determining the condition of a region of tissue comprising:

a housing having an interior space;

an electrode positioned within the interior space of the housing;

said housing including a first opening communicating with the interior space of the housing and adapted to be placed substantially proximate to the surface of a region of tissue; and

said housing including a second opening communicating with the interior space of the housing; and

wherein when said first opening is placed substantially proximate to the surface of the region of tissue and suction is applied to the second opening and an electrical connection is made between the region of tissue to be examined and the electrode.

7. The device of claim 6, further comprising a flange surrounding said first opening.

8. The device of claim 6, wherein the region of tissue has ducts.

9. The device of claim 6, wherein the region of tissue is selected from the tissue group consisting of breast, prostate, liver, uterus, pancreas and salivary gland tissue.

10. An apparatus for determining the condition of a region of tissue comprising:

- a cup comprising
  - a housing having an interior space,
  - an electrode disposed within the interior space of the housing,

- a first opening defined by the housing and adapted to be placed over the surface of a region of tissue, and

- a second opening defined by the housing and the interior space of the housing; and

- a suction device attached to said second opening;

- a measuring device in communication with said electrode operable to determine the electrical signal from said electrode; and

- a displaying device in communication with said measuring device operable to display the electrical signal from said electrode.

11. The apparatus of claim 10, wherein said measuring device is in communication with said electrode by a wireless connection.

12. The apparatus of claim 10, wherein said displaying device is in communication with said measuring device by a wireless connection.

13. A method for determining a condition of a region of epithelial breast tissue comprising:

establishing a connection between a first electrode and the epithelial tissue of a breast;

placing a second electrode in contact with the surface of the breast;

establishing a signal between the first and second electrodes;

measuring an electrical property between the first and second electrode; and

determining the condition of a region of epithelial tissue based on the signal between the first and second electrode.

14. The method of claim 13, wherein the electrical property is impedance.

15. The method of claim 13, wherein the electrical property is a DC potential.

16. The method of claim 13, wherein the method of establishing a connection between the first electrode and the epithelial tissue is by a cannula.

17. The method of claim 16, wherein the cannula is a ductal probe.

18. The method of claim 13, wherein the method of establishing a connection between the first electrode and the epithelial tissue is by an electroconductive media.

19. The method of claim 18, wherein the electroconductive media is a physiologic saline.

20. The method of claim 18, further comprising introducing an agent into the electroconductive media.

21. The method of claim 20, wherein the agent is a hormone.

22. A method for determining the location of a tumor in a body comprising:

establishing a connection between a first electrode and the epithelial tissue of the duct of an organ;

placing a second electrode at a second location on the body;

establishing a signal between the first and second electrodes;

measuring an electrical property between the first and second electrodes; and

determining the condition of the selected region of epithelial tissue based on the signal between the first and second electrode.

23. The method of claim 22, wherein the second location is on the surface of the body.

24. The method of claim 22, wherein the epithelial tissue is located within the breast.

25. The method of claim 22, wherein the epithelial tissue is located within the prostate.

26. An apparatus for determining the location of a tumor in a body comprising:

first electrode operable for electrical communication with the epithelial tissue of the duct of an organ;

a second electrode at a location spaced from said first electrode;

means for establishing a signal between the first and second electrodes; and

means for measuring at least one electrical property between the first and second electrode so as to determine the

condition of the selected region of epithelial tissue based on the signal between the first and second electrode.

27. The apparatus of claim 26, wherein the electrical property is impedance.

28. The apparatus of claim 26, wherein the electrical property is a DC potential.

29. The apparatus of claim 26, wherein the means for establishing a signal between the first and second electrodes is by an electroconductive media.

30. The apparatus of claim 29, wherein the electroconductive media is a physiologic saline.

31. The apparatus of claim 26, wherein the at least one electrical properties is a plurality of properties, including impedance and DC potential.

32. The apparatus of claim 26, wherein the at least one electrical properties is a plurality of properties, including impedance measured at least two different frequencies.

33. An apparatus for determining the condition of an area of tissue in a body comprising:

first electrode operable for electrical communication with the epithelial tissue of the duct of an organ;

a second electrode at a location spaced from said first electrode;

a means for establishing a signal between the first and second electrodes; and

a means for measuring a plurality of electrical properties between the first and second electrode so as to determine the condition of the selected region of epithelial tissue based on the pluralities of electrical properties between the first and second electrode.

34. The apparatus of claim 33, wherein the plurality of electrical properties are used to determine an electrical profile of the area of tissue.

35. The apparatus of claim 34, wherein the electrical profile is displayed on a computer monitor.

36. A computer-readable medium having computer-executable instructions for performing a method for determining the presence of a tumor in the human breast comprising:

establishing a connection between a first electrode and a region of epithelial tissue within the duct of a breast;

establishing a connection between a second electrode on the surface of the breast;

establishing a signal between the first and second electrodes;

measuring an electrical property between the first and second electrode; and

determining the presence of a tumor based on the signal between the first and second electrode.